Study/report of laser welding and cutting for in-space manufacturing applications

Project Title	Study/report of laser welding and cutting for in-space manufacturing applications
Project Summary	Perform a literature review and technology survey on welding in space, focusing specifically on technologies for laser welding and cutting.
Country	United States

Project Description

External in-space manufacturing capabilities can enable fabrication, repair, and assembly of structures in the space environment. These technologies may reduce reliance on mechanical fasteners or adhesives for assembly/repair and aid in construction of architectures (space habitats, solar arrays, space telescopes) which exceed the volumes of launch payload fairings. In this project, students will perform general background research on welding in space (documenting historical experiments and lessons learned from the Russian and US space programs). Students will conduct a survey of current commercially available laser welding and laser cutting systems, considering (with input from NASA) accommodations or modifications to these systems which would be necessary to adapt them to applications for robotic in-space manufacturing and assembly. Students will be asked to survey materials and process modeling efforts for laser welding which may be relevant to operation of systems in a microgravity environment.

Required Skills or Interests

Skill(s)
Analytical writing
Data analysis

Additional Information

None

Language Requirements

None